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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,093	04/08/2004	Eric R. Blomiley	MI22-2517	2225

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EXAMINER	
MACARTHUR, SYLVIA	
ART UNIT	PAPER NUMBER
1763	

DATE MAILED: 08/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/822,093	BLOMILEY ET AL.	
	Examiner	Art Unit	
	Sylvia R. MacArthur	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,10 and 13* is/are pending in the application.

4a) Of the above claim(s) *2 and 7-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-6 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 April 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/8/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ATION

Election/Restrictions

1. Applicant's election without traverse of claims 1, 3-6, and 13 in the reply filed on 5/13/2006 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> ***Broadest interpretation of the claims – No structural limitations has been provided to recite what means of measuring emissivity, just that the process occurs. This process of measuring emissivity has been considered, but has not been given weight as the emissivity can inherently be measured from all sides of the susceptor of the prior art.***

3. Claims 1 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Wang et al (US 6,167,834).

Regarding claims 1 and 4: Wang et al teaches a susceptor 16 comprising a body having a front substrate receiving side (top), a backside (back), and a peripheral edge. The susceptor is made of the materials listed in col. 9 lines 37-65. Each of the materials are coated with an additional layer having a different thermal conductivity. The limitation requiring that the susceptor body have an outer layer with a thermal conductivity of 3x

the materials of the body is a matter of intended use. Upon supplying gas to a chamber a portion of the gas will also deposit onto the components of the chamber including the susceptor. The type of gas supplied into the chamber is immaterial to the susceptor as it is matter of intended use and does not further structurally limit the susceptor. Note selective epitaxial silicon will not deposit as there is no space between the wafer and the susceptor's front receiving side that would allow deposited material to travel to the underside of the wafer and onto the susceptor.

4. Claims 1, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Stone et al (US 2002/0066551).

Regarding claims 1 and 4: Stone et al teaches a chuck 10 comprising a body having a front substrate receiving side (top), a backside (back), and a peripheral edge. The chuck is made of the materials listed in [0090].Each of the materials are coated with an additional layer (a metal) having a different thermal conductivity. Upon supplying gas to a chamber a portion of the gas will also deposit onto the components of the chamber including the susceptor. Note selective epitaxial silicon will not deposit as there is no space between the wafer and the susceptor's front receiving side that would allow deposited material to travel to the underside of the wafer and onto the susceptor.

Regarding claim 5: The limitation requiring that the susceptor body have an outer layer with a thermal conductivity of 3x the materials of the body is a matter of intended use.

The type of gas supplied into the chamber is immaterial to the susceptor as it is matter of intended use and does not further structurally limit the susceptor. The chuck of Stone et al further teaches a heater 416.

5. Claims 1, 4, and 13 are rejected under 35 U.S.C. 102(e) as being anticipated by AmRhein et al (US 2003/0215963).

Regarding claims 1 and 4: AmRhein et al teaches a susceptor comprises a body having a front substrate receiving side (top), a backside (back), and a peripheral edge. The susceptor is made of SiC and has an outer layer of SiN which is deposited onto the substrate according to [0059]. Note selective epitaxial silicon or the outer material will not deposit as there is no space between the wafer and the susceptor's front receiving side that would allow deposited material to travel to the underside of the wafer and onto the susceptor.

Regarding claim 13: The susceptor of AmRhein et al further comprises ring 32, see Fig. 1.

6. Claims 1 and 4 are rejected under 35 U.S.C. 102(e) as being anticipated by De Boer (US 2006/0057826).

Regarding claims 1 and 4: De Boer teaches a susceptor wherein the emissivity is monitored from the backside. The susceptor comprises a body having a front substrate receiving side (top), a backside (back), and a peripheral edge. The susceptor 10 according to [0004] is a graphite disk with a SiC coating. The SiC is the material upon which selective epitaxial silicon or the outer material will not deposit as there is no space

between the wafer and the susceptor's front receiving side that would allow deposited material to travel to the underside of the wafer and onto the susceptor.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al, AmRhein, Stone et al, or DeBoer et al henceforth known as the *primary prior art* in view of Omstead et al (US 6,544,341).

The teachings of the *primary prior art* were discussed above.

All fail to teach the outer material or material deposited is copper or polycrystalline diamond. Note copper has a higher thermal conductivity than the materials of construction of the susceptor of the primary prior art.

Omstead et al teaches a CVD apparatus wherein Cu is deposited onto the substrate. Upon supplying gas to a chamber a portion of the gas will also deposit onto the components of the chamber including the susceptor. The motivation to supply a chamber with Cu and to allow the copper to deposit onto the susceptor is that Cu has a high thermal conductivity allowing the susceptor to reach the desired temperature at a faster rate. Additionally, Cu produces excellent thin films according to col. 2 lines 1-6.

One of ordinary skill in the art at the time of the claimed invention would have found obvious to use copper as the deposition source as it offers advantageous physical

and chemical properties in the field of semiconductor manufacturing. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to provide Cu as the material used for deposition.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the hours of 8:30 a.m. and 5 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sylvia R MacArthur
Patent Examiner
Art Unit 1763

August 18, 2006